

UCSC CIRM Training Program in Systems Biology of Stem cells

Grant Award Details

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Grant Type: Research Training II

Grant Number: TG2-01157

Project Objective: Provides a stem cell training program within UCSC for 10 individuals (6 post-doctoral, 4 pre-doctoral), geared towards systems biology of stem cells. This program places particular emphasis on basic research, mathematical modeling and bioinformatics, and use of multidisciplinary approaches.

Investigator:

Name: David Haussler

Institution: University of California, Santa Cruz

Type: PI

Award Value: \$4,397,002

Status: Closed

Progress Reports

Reporting Period: Year 4

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Reporting Period: Year 5

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Reporting Period: Year 6/NCE

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Grant Application Details

Application Title: CIRM Training Program in Systems Biology of Stem cells

Public Abstract:

We propose a CIRM Training Program in Systems Biology of Stem Cells featuring formal and supplemental education in a collaborative, interdisciplinary biomedical research environment. As part of the Institute for Biology of Stem Cells, this program brings together the unique strengths of faculty with expertise in key areas for advancing basic stem cell research. Our labs are developing computer and mathematical programs to analyze large volumes of stem cell data and to understand stem cell behavior. We have experts on DNA and RNA structure who are learning how those biomolecules instruct stem cells to self-renew or develop into specialized cell types. Other faculty are using animal models and advanced techniques to investigate important questions in stem cell biology, and our engineers are working on improving the technology for studying and utilizing stem cells. This program will provide an in-depth understanding of the biology of stem cells, the skills to use stem cells in one's own research, and the ability to create computer programs and use the results of computer analyses in one's own research. It will also provide the tools to make well-informed decisions regarding the ethical and social issues surrounding stem cell research. This Type II program will comprise six postdoctoral and four predoctoral positions lasting up to three years. Formal training includes three required courses (Introduction to Stem Cell Biology; Stem Cell Research: Scientific, Ethical, Social, and Legal Issues; and Current Protocols in Stem Cell Biology) plus 14 optional electives chosen to support trainee research goals and provide breadth. Supplemental training includes participation in a stem cell journal club, stem cell group meetings, the [REDACTED], seminars and other events. Trainees can also take the [REDACTED] Human Embryonic Stem Cell Lab course and will be encouraged to present at a national conference. These activities provide opportunities for trainees to expand their knowledge, present their work, and form a network of colleagues and potential collaborators. Our recently completed and operational Shared Stem Cell Facility and numerous other shared labs – including facilities for animal research, chemical screening, genome sequencing, microarray, proteomics, and bioinformatics – provide excellent resources to this program. We have a strong track record in graduate and postdoctoral training in biomedical research anchored in our Molecular, Cell and Development Biology and Bioinformatics programs. We are committed to offering more opportunities through the [REDACTED] CIRM Bridges program and our new interdisciplinary graduate Program in Biomedical Science and Engineering. We are also committed to increasing the numbers of underrepresented minorities in biomedical research and will continue our tradition of outreach and support to those populations.

Statement of Benefit to California:

The State of California has made a commitment to support stem cell research and to advance work that will lead to diagnostics, therapies, and cures for human injury and disease. The proposed training program will assist the State in reaching this goal by training graduate students and postdoctoral researchers in areas of basic stem cell research. Basic (or discovery) research uncovers the molecular and cellular details that instruct stem cells to remain as stem cells or to differentiate into the myriad types of cells of the human body. Knowledge of how stem cells function at this level is critical to utilizing them for devising medical breakthroughs. While in this program, trainees will not only be gaining an education, they will be making important contributions to the research project they have mapped out with their mentor, which should lead to publication and furthering the knowledge needed for stem cell medicine to succeed. Furthermore, many of these newly trained stem cell scientists will stay in California to build their own careers in academia or industry.

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